

FISH PASSAGE IMPROVEMENT AND COORDINATION

Job Progress Report

Project AFS-2

(An Anadromous Fish Conservation Act funded,
U.S. Fish and Wildlife Service administered project)

Subproject I. Interagency Coordination of Fish Passage
Requirements

Subproject II. Fish Transportation Oversight

Period Covered: March 1, 1985 to February 28, 1986

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JOB PROGRESS REPORT

State of: Idaho

Title: Interagency Coordination of
Fish Passage Requirements

Project No.: AFS-2 & AFS-2-1

Subproject No.: I

Period Covered: March 1, 1985 to February 28, 1986

OBJECTIVES

To provide expertise on matters of anadromous fish passage to working committees involved with fish passage in the Columbia and Snake rivers as well as effectuate interagency coordination of matters regarding anadromous fish passage in the Columbia River basin.

PROCEDURES

A fish passage specialist was assigned to three working committees that are responsible to the state and federal fishery agencies for the development and oversight of fish passage operating criteria and plans. This specialist, representing Idaho Department of Fish and Game (IDFG), was a member of the following committees:

1. The Fish Passage Committee of the Columbia Basin Fish and Wildlife Council (CBFWC).
2. The Fish Passage Development and Evaluation Program (FPDEP) of the U.S. Army Corps of Engineers.
3. The Research Review Subcommittee, a subcommittee of FPDEP, assures that proper research needs are being addressed and that anadromous fish are not subjected to unnecessary or poorly designed research evaluations.
4. The Northwest Power Planning Council (NPPC) Mainstem Passage Advisory Committee (MPAC).

The fish passage specialist inspected adult fish passageways at lower Snake River hydroelectric projects.

RESULTS

Fish Passage Committee Participation

The anadromous Fish Passage Committee (FPC) is established under the CBFWC to develop coordinated technical and policy analyses for Council consideration. Members of the FPC have the following objectives and duties:

A. To coordinate analyses of member entity representatives on technical aspects and matters of policy relative to dam operations and water management within the Columbia Basin relating to:

1. Adult anadromous fish migration

- (a) Design and operation of adult passage facilities, including development and periodic revision of basic operating standards.
- (b) Spillway, powerhouse and other operations as they affect adult migration.

2. Juvenile anadromous fish migration

- (a) Reservoir impacts on anadromous fish.
- (b) Water budget and other main stem migration flows and spills, and development of annual Detailed Fishery Operating Plan (DFOP).
- (c) Juvenile fish transportation.
- (d) Design and operation of juvenile bypass facilities to include development and annual revision of basic operating standards.
- (e) Spillway operations affecting juvenile survival.
- (f) Coordination of flows and hatchery releases.

B. To provide technical guidance to the Water Budget Manager; to monitor the manager's work and report periodically to the Council.

Members of the FPC meet regularly each month and address agenda items which pertain to both adult and juvenile passage at the Columbia Basin's main stem hydroelectric dams. The following six agencies are represented:

- 1. U. S. Fish and Wildlife Service
- 2. National Marine Fisheries Service
- 3. Idaho Department of Fish and Game
- 4. Oregon Department of Fish and Wildlife
- 5. Washington Department of Fisheries
- 6. Washington Department of Game

In addition to the above committee members, FPC meetings usually have representatives in attendance from the Water Budget Center (WBC) and the Columbia River Intertribal Fish Commission (CRITFC) as well as the Council's executive secretary. Meetings normally take place in Portland, but are occasionally held in the field when direct observation of fish passage related matter is necessary.

During the period March 1, 1985 to February 28, 1986, I attended 12 FPC meetings. All but two of the meetings were held in the Portland office of the National Marine Fisheries Service (NMFS). In May, the committee visited the Lower Granite juvenile collection facility on the Snake River where members observed "open flume" research operations. During October, committee members met in Lewiston, Idaho.

The agenda items covered during the 12 monthly meetings were, of course, too numerous to list and discuss in this document. However, I will attempt to mention some of the more important topics the committee handled during the reporting period.

FTOT's Annual Work Plan

As chairman of the Fish Transport Oversight Team (FTOT), I was responsible for securing fishery agency and tribal approval of the 1986 FTOT Work Plan. During the November FPC meeting, I distributed the 1986 draft plan and discussed proposed changes. The changes were:

1. Increasing the Snake River minimum flow for transport maximization from 85K cfs to 100K cfs; and
2. Reducing the transport maximization "trigger" from 80 to 75% of the estimated spring/summer chinook outmigration.

The committee reviewed the 1986 draft plan at the December 1985 meeting and recommended that the new changes be adopted. This recommendation was passed on to the CBFWC's Working Group in January 1986.

The FTOT Annual Work Plan is a "working document which describes operations and establishes criteria for the transportation of juvenile migrants at Lower Granite, Little Goose and McNary dams. The work plan provides for cooperative management between the fishery agencies and the Walla Walla District, Corps of Engineers (NPW). Its overall goal is to transport juveniles within established guidelines and maximize survival of fish collected and transported. The objectives of the FTOT Annual Work Plan are as follows:

1. Provide efficient collection and safe barge or truck transport of juvenile salmonids from collector dams to their release points below Bonneville Dam.

2. Inspections prior to, during and after the juvenile migration season will be conducted by FTOT, project, state and tribal biologists. These inspections should ensure facility readiness and operation at established criteria as well as determining maintenance requirements for the following season.
3. Identify and recommend any changes which would be beneficial to fish collection and transport operations and/or bypass systems as related to transportation.
4. Ensure that collection, transport and release site facilities will be ready for operation prior to the spring juvenile outmigration (April 1, 1985).
5. Follow operating criteria established for facilities, barges and trucks. Criteria will be updated to maintain standards for holding fish, i.e., fish densities, sampling and facility operation and maintenance. The FTOT will monitor and coordinate changes during the transport season.
6. Coordinate evaluation of the transportation program for 1986.
7. Training of new personnel associated with collection and transport facilities.
8. Preparation of an annual report detailing the past year's transportation effort.

Lower Granite Reservoir Dredging Window

The committee considered the Corps of Engineers' (COE) request to dredge the Lower Granite pool at the Port of Clarkston (800,000 cubic yards annually). The committee, reacting to presentations by me and by other workers, unanimously opposed summer dredging periods. A midwinter (February 1 to March 31) window was recommended which would reduce dredging impact on an important steelhead sport fishery and the juvenile, downstream migration beginning in mid-March. We also recommended that the COE use two dredges instead of one. These actions were verbally submitted to the COE at the March FPDEP meeting.

At the committee's May 1985 meeting, WDF's member requested that the dredging window be shifted two weeks earlier to January 15 to March 15.

Little Goose Juvenile Bypass System

The committee met at Lower Granite juvenile facility in May 1985 to observe the "open flume" bypass testing being carried out by University of Idaho researchers. We requested that the project leader prepare the results of the flume tests by midsummer so that decisions could be made as quickly as possible for the reconstruction of the Little Goose juvenile facility.

The test report was reviewed at the August 1985 meeting, and I drafted a letter to the COE indicating that fisheries agencies and tribes desired additional flume testing to answer unresolved questions associated with "open-flume" bypass systems.

In September, the COE responded that additional flume testing would delay Little Goose reconstruction by two years (1991), and the FPC decided to recommend the baffled flume option at its September 1985 meeting. We also requested that the flume width be increased to allow for adult passage and reduced debris problems. I drafted a letter from the CBFWC to the Walla Walla District COE on our decision.

Juvenile Transport Maximization Based on Minimum Daily Average Flows

As part of FPC's juvenile transport evaluation process, I was requested to prepare a report on the rationale behind the minimum flow "trigger" volumes (Appendix I). The committee voted to change the Snake River minimum flow to 100K cfs.

Water Budget/Fish Passage Center

The FPC spent considerable time during the 1985 report period directing the progress of the WBC reorganization. Problems with their BPA funding source required that the center reorganize the contract process and restructure its personnel staffing. The committee also recommended that the center's name be changed to the Fish Passage Center. New guidelines and standards for FPC hiring and employing subcontractors were established, as was a new MOU with Pacific Marine Fisheries Commission (PMFC).

Other AFPC Actions

In addition to the above-mentioned items, committee members took action on or discussed the following topics during the 1985 reporting period:

1. Adult trapping at The Dalles Dam;
2. Pit tagging research at McNary Dam;

3. 1986 draft Detailed Fishery Operating Plan;
4. Review of main stem research projects;
5. Water budget implementation
6. Reevaluation of transport guidelines;
7. Review of smolt monitoring program;
8. Juvenile transport evaluation;
9. Reviews on Mainstem Passage Advisory Committee (MPAC);
10. BPA's intertie expansion;
11. Galloway Dam and reservoir modeling analysis; and
12. Juvenile fish requirements for main stem research and smolt monitoring.

FPDEP Committee Activities

The Fish Passage Development and Evaluation Program is a Corps of Engineers (North Pacific Division) function that deals with both research and operational programs at Corps projects. Basically, the FPDEP committee is made up of Corps biologists (North Pacific Division and NPW) and FPC representatives. Together we help the Corps deal with fishery research needs, and to some extent, operational programs at Corps projects. In a lesser function, FPDEP serves as a communications forum between the fishery agencies/tribes and the Corps.

There are normally bimonthly meetings for FPDEP, regularly occurring on the same days as FPC meetings in Portland, Oregon. During the period March 1985 through February 1986, I attended seven FPDEP meetings. Some of the major topics that were considered at the 1985-1986 meetings were:

1. Little Goose Dam juvenile facility reconstruction;
2. Lower Granite Reservoir dredging;
3. John Day juvenile bypass system construction/operation;
4. Juvenile fish availability for Corps-funded research;
5. Fish guidance efficiency research at Snake River dams;
6. Ice Harbor adult fish ladder maintenance (auxiliary pump);
7. Ready dates for juvenile bypass/collection facilities;
8. The Corps poor quality control for its Annual Fish Passage Report;
9. Late season smolt monitoring at Lower Granite (gatewell dipping);
10. Gate raising to improve juvenile guidance at Corps projects; and
11. Feasibility of new "double length" STSs.

FRSRS Committee Actions

The Fish Research Scientific Review Subcommittee (FRSRS) is a subcommittee of FPDEP functioning to determine whether the experimental designs submitted to the Corps meet predetermined research objectives. Research proposals are examined closely to see if they are scientifically capable of meeting those objectives and to ensure that results will be biologically sound and statistically valid.

The subcommittee meets in July to review preliminary proposals and again in October-November to review detailed study plans and as necessary to review results. Items such as coordination, statistical analysis and numbers of fish to be handled and/or sacrificed are important elements in the subcommittee review process. Representatives on the FRSRS are NMFS, IDFG, WDF, ODFW, COE (NPW, NPP and NPD) and CRITFC.

During our July 1985 meeting, I helped review 10 draft research proposals. The minutes of the July 23 and 24 FRSRS meeting are included as Appendix II. We met for the second time in October for final review of these projects. The minutes from the meeting are located in Appendix III.

Mainstem Passage Advisory Committee

The NPPC recognized the need to update and improve its staff's technical knowledge in juvenile fish passage. At its June 1985 meeting, NPPC chartered an advisory group of fish passage experts to accomplish this purpose. The role of the advisory committee (MPAC) was to provide the Council staff with technical advice and the best available scientific information related to juvenile salmonid fish passage. The committee was not formed as a forum for negotiations, nor for the purpose of developing policy decisions. The goals and objectives of MPAC as outlined by the charter were:

1. Examination of the technical basis of the fishery agencies' and tribes' interim spill proposal;
2. Examination of the estimated cost of the agencies' and tribes' proposal;
3. Identification of alternative interim objectives, with associated cost estimates;
4. Policy-level consultations in conjunction with the 30-day public comment period; and
5. Program amendment process.

The first committee goal was the development of an appropriate interior spill objective at main stem Corps dams. In addition, the committee was assigned the task of reviewing the latest scientific data in order to provide the Council staff with the most accurate coefficients and assumptions used to estimate expected smolt survival at Corps projects on the Snake and Columbia rivers. MPAC then moved into exercises using modeling techniques to estimate fish spill costs to the federal power system. At its December 1985 meeting, the NPPC made the decision to enter into a "fast track" amendment process to secure a new survival standard for juvenile fish passage in 1986. The NPPC's issue paper on the subject of main stem passage for juvenile migrants is attached as Appendix IV.

JOB PROGRESS REPORT

State of: Idaho

Title: Fish Transportation Oversight

Project No.: AFS-2 & AFS-2-1

Subproject No.: II

Period Covered: March 1, 1985 to February 28, 1986

OBJECTIVES

To provide direction, coordination and oversight of the anadromous smolt collection and transportation program on the lower Snake and Columbia rivers.

PROCEDURES

Idaho Department of Fish and Game (IDFG) will assign a fish passage specialist to be a member of the Fish Transportation Oversight Team (FTOT). This team is a subcommittee of the Columbia Basin Fish and Wildlife Council's Anadromous Fish Passage Committee and provides planning and coordination by the fishery agencies, Corps of Engineers and Indian tribes, as well as direct inspection and oversight of quality control in the smolt handling process at the dams.

RESULTS

I represented the IDFG on FTOT during the 1984 transport season. I also acted as the Oversight Team's chairman during the reporting period. In 1985, FTOT continued to manage the juvenile transport program and provided coordination between Walla Walla District, Corps of Engineers (NPW), fisheries agencies and tribes. The FTOT was composed of biologists from the National Marine Fisheries Service (NMFS), IDFG, Columbia River Intertribal Fish Commission (CRITFC) and NPW.

The FTOT's goal is to maximize survival of Snake and Columbia River salmonids by improving collection, transport and bypass conditions for juvenile migrants. Responsibilities include providing coordination; biological and program oversight; developing an annual work plan; conducting on-site inspections of collection and transport facilities prior to, during and after the season; and producing an annual report summarizing transport activities. A meeting is hosted by FTOT each summer for program participants and other interested individuals to discuss current season's operations and recommend program and facility modifications for the following year.

Additional biological oversight is provided by cooperative agreements between NPW and the states of Idaho, Oregon and Washington. Under these cooperative agreements, NPW funds state fishery biologists at each transport project. Idaho's representatives were assigned to Lower Granite, Oregon's to Little Goose and Washington's to McNary. Work loads were shared by NPW's project biologists and state biologists. I prepared the contract for the cooperative agreement between IDFG and NPW for the 1984 transport season and negotiated the budget with NPW staff for the Lower Granite biological oversight. In addition, I directly supervised the State of Idaho's biologist that was assigned to the Lower Granite collection/transport project. I assisted the biologist with preparation of a 1985 Project Summary Report.

During 1985, juvenile salmonids were collected and transported from the Snake River at Lower Granite (River Mile (RM) 107.5) and Little Goose (RM 70.3) dams and from the Columbia River at McNary Dam (RM 292). The Snake River, a major tributary of the Columbia River, joins at RM 324.3. Collected smolts were transported below Bonneville Dam (RM 146.1) via truck or barge and released into the river. Transported smolts bypassed four to eight dams and 146 to 280 miles of impounded river.

Rather than detail the 1985 juvenile transport season in this progress report, the FTOT's Fish Transportation Oversight Team Annual Report-FY 1985 (Koski et al.) should be reviewed as a supporting document. This report summarizes the 1984 transport season, which commenced March 28 and ended on September 26. A total of 18,210,300 smolts were collected including 4,482,300 at Lower Granite, 2,270,200 at Little Goose and 11,457,800 at McNary.

Total collection included 3,107,200 and 247,800 smolts bypassed at McNary and Little Goose, respectively. Bypass operations began the first day of operation and ended on May 8 and July 12 at Little Goose and McNary, respectively.

A total of 14,787,600 juvenile salmonids were transported to below Bonneville, with Lower Granite accounting for 4,459,400, Little Goose 2,008,000 and McNary 8,319,174. Barge transport accounted for 14,238,400 and trucking for 549,200.

A P P E N D I C E S

September 12, 1985

FROM: Steve Pettit
TO: FPC

APPENDIX I

SUBJECT: Thoughts on Transport Maximization Based on Minimum Daily Average Flows

I. Minimum River Flows Required to Maximize Juvenile Transport

A. Snake River Projects

1. Lower Granite and Little Goose

- a. Daily average minimum flows at lower Snake dams are at the low end of the range of what researchers have defined as moderate flows (CRFC, 1979). Since it has been demonstrated that moderate flows result in significant delay and mortalities of 40 to 65%, it can be concluded that these minimum daily average flows are indeed low if even modest harvestable runs are to be maintained.

2. Flow classifications at Snake dams

<u>Low Flows</u>	<u>Moderate Flows</u>	<u>High Flows</u>
30-50 kcfs	80-100 kcfs	120-180 kcfs

3. Flow related losses

- a. Minimum daily average flow is the major variable governing flow related mortality.
- b. Minimum daily averages are related to delay, and this delay is related to mortality.
- c. Juvenile migrants must adhere to very critical time schedules or serious mortality will occur.
 - (1) Smolts will revert to parr if exposed for significant periods to H₂O temperatures above 54°F. Temperatures above 54°F are regularly reached in the Columbia River by mid-May.
 - (2) Since significant migration of smolts begins in the Snake River in mid-April, they have only about 30 days to move through the mainstem rivers if the impact of parr-reversion level temperatures is to be minimized.
- d. In moderate flow years (80-100 kcfs), smolt travel time through 8 dams and reservoirs can take approximately 41 days. In high flow years, approximately 23 days are required, and during low flows, 69 days would be required.

B. Lower Columbia (McNary Facility)

1. The minimum daily average flows recommended by the Council (1979) for McNary Dam are as follows:

<u>Date</u>	<u>Daily Average</u>
April 1-15	100 kcfs
16-25	150 kcfs
26-30	200 kcfs
May 1-31	220 kcfs
June 1-15	200 kcfs
16-30	120 kcfs

2. Flow classification for lower Columbia

<u>Low Flows</u> <u>_(kcfs)</u>	<u>Moderate Flows</u> <u>(kcfs)</u>	<u>High Flows</u> <u>(kcfs)</u>
150-180	200-300	350-500

II. Intent of Transport Guidelines

A. Snake River

1. At Little Goose and Lower Granite maximized transport for spring-summer yearling chinook is governed by the minimum daily average flow of 85 kcfs until the "maximization trigger" is reached (75% of the spring-summer chinook).
2. The TET group, clearly felt that maximizing juvenile transport was required to insure that migrational delay would not occur as flows fell below minimums. However, the TET group did not originally consider the possibility that transport operations, based on the minimum daily average criteria, could technically switch back-and-forth between maximization and standard operations for short periods of time.
3. It has not been FTOT's practice, nor desire to change transport operations from one mode to another, when flows were only predicted to drop below daily minimums for short durations or weekend (when power demands dropped).
4. FTOT has been using an unofficial minimum duration of 7-days (based on RCC forecasting) before we recommend that transport be maximized.

From Steve Pettit to FPC

Sujb: Thoughts on Transport Maximization Based on Minimum Daily Average Flows
9/12/85

B. Columbia River

1. At McNary Dam and juvenile collection facility, maximum transportation operations are governed by minimum daily average flow of 220 kcfs and by the presence of sub-yearling, fall chinook.
2. There appears to be a slight controversy concerning where the flow is to be measured, to estimate the daily average flow. FTOT members have assumed that inflow at McNary was the point on the lower Columbia where the measurement was taken. Others feel that The Dalles provides the best point.
3. I have reviewed the minutes from the six TET meetings, in addition to my personal notes of the meetings, and find no "black-and-white" reference to where the lower river daily average flows are to be measured.
4. I suggest the FPC carefully review the intent of maximizing collection/transport, and based on information we have on the travel time between the McNary project and Bonneville and the effect that migrational delay has on juvenile survival, determine the best sight.
5. We may want to reconsider transport maximization criteria at McNary anyway, because of the juvenile bypass protection systems which are being constructed at John Day.

SP/cf



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE

NOA 80-004

Northwest & Alaska Fisheries Center
Coastal Zone & Estuarine Studies Division
2725 Montlake Boulevard East
Seattle, Washington 98112

APPENDIX II

August 27, 1985

F/NWC5:GEM

TO: Ed Mains, Chief, Environmental Resources Branch
NPD, U.S. Army Corps of Engineers

FROM: *Gerald E. Monan*
Gerald E. Monan, Chairman
Fish Research Scientific Review Subcommittee

SUBJECT: Approved Minutes, Meeting of Fish Research Scientific Review
Subcommittee (FRSRS), 23 and 24 July 1985

The meeting was convened at the Northwest and Alaska Fisheries Center in Seattle, Washington, at 1005 hours, 23 July 1985. In attendance during all or part of the meeting were the following individuals:

*Doug Arndt	CofE
Teri Barila	CofE
Lyle Calvin	CofE (Oregon State University)
Wes Ebel	NMFS
*Bob Gerke	WDF
Al Giorgi	NMFS
Dick Krcma	NMFS
Jim Kuskie	CofE
Gene Matthews	NMFS
Chip McConnaha	WBC
*John McKern	CofE
*Jerry Monan	NMFS
Donn Park	NMFS
*Steve Pettit	IDFG
Howard Raymond	NMFS
Demetria Shew	CofE
Lowell Stuehrenberg	NMFS
George Swan	NMFS
Bob Vreeland	NMFS
*John Williams	CofE
*Chuck Willis	ODFW
John Wilson	NMFS

* = Committee Members

The following proposals submitted for funding were reviewed for need, feasibility, and technical approach:



1. "Proposed supplement to the 1985 study design evaluation of adult fish passage at McNary Dam" by Jim Kuskie and Demetria Shew.

This proposal was presented to the Committee cold in that copies had not been supplied for earlier review. Most of the discussion related to conducting the study on fall chinook salmon this year when river temperatures are so high. Concerns were expressed that handling and tagging the fish safely will be a problem and subsequent behavior will likely not relate to a more normal year.

Jim Kuskie stated that passage times for spring and summer chinook and sockeye salmon were good in 1985 with 18 orifices closed in the adult collection system. Bob Gerke asked if anybody thought that fall chinook salmon would react negatively to the 18 closed orifices; no one on the Committee felt that having the 18 orifices closed would be a problem, and the Committee unanimously voted no objection to leaving the 18 orifices closed.

After discussing the problems associated with the abnormally high water temperatures, etc., the Committee voted that researchers should prepare to run the study and submit a final proposal if temperatures return to "normal" early enough for the study to be carried out. If weather conditions change drastically, the Committee would be polled by telephone for final approval.

2. "Survival of chinook salmon smolts with stress levels encountered at dams" by T. C. Bjornn (presented by Teri Barila).

The Committee did not have a lot to say regarding this ongoing program. Gene Matthews felt that perhaps the ELISA would be too sensitive for meaningful results. Bob Vreeland expressed concern that tagging may induce BKD and perhaps Bjornn should also look at untagged fish. The Committee unanimously approved the study as presented.

3. "Hydroacoustic evaluation of fish guiding efficiency at Little Goose Dam" by John McKern.

John McKern explained that ultimately, if approved, the proposed study would be put out for bid in accordance with applicable regulations. McKern explained that while the study was proposed for Little Goose Dam, he would like approval of the concept and the place of application could be changed if the Committee felt it would best provide supplemental data elsewhere.

Most of the discussion was on Objective C. John Williams and others felt that until a good correlation could be shown between the numbers indicated via hydroacoustics and the numbers taken by the fyke nets, they would be uncomfortable with Objective C. Bob Gerke questioned if the detection rate is the same at spill gates and turbines--Teri Barila said both were extrapolations, and she would have more information by our October meeting.

Gerke wondered if the study would require special dam operations, and McKern said no, they would take conditions as they come or as dictated by other research at the dam.

Chuck Willis questioned if the "direct counts" mentioned in Sentence 5 of Paragraph d weren't actually estimates--most everyone agreed they were.

After all the discussion, it was agreed unanimously that the work should be done, and although in the final proposal the place might be changed, Little Goose Dam would be satisfactory.

4. "Evaluation of juvenile salmonid passage through downstream migrant bypass systems, turbines, and spillways" by Donn Park.

There was an initial concern as to why Donn Park was marking the fish at Lower Granite Dam rather than at the hatchery. Donn Park responded that there were insufficient facilities at the dam to hold all the marked groups.

There was considerable discussion about release sites in Task 1.1. It was the recommendation of the Committee that the turbine release would be made below the depth reached by the traveling screen. The Committee also felt the bypass release should be near the ceiling, close to the gatewell opening, and a gap net should be in place. After considerable debate, the Committee decided that a "second control group" should be released below the dam; the release was to coincide with the passage of the median fish from the bypass release (if prerelease timing information indicated this would be a major logistical problem, the researchers could stick to their original plan).

Lyle Calvin stated that in Park's analysis of the study as proposed, he should take into account that he would really have three groups with three subgroups each--not nine separate replicates.

There was some discussion of spill levels, and Park said he realized it would depend upon weather conditions etc., but he wanted a realistic spill--40% or so.

There was little discussion of Task 1.2. Gene Matthews related his plans for Task 1.3 and again there was little discussion.

There were some general recommendations by the Committee:

- a. Try to move the starting date up by 1 week.
- b. Steve Pettit asked that Park put a detailed logistical plan for marking and hauling the experimental fish in the final proposal.
- c. Calvin stated that researchers should stick to the previously agreed upon levels for of 0.05 and of 0.20 in all their statistical designs.

The Committee unanimously approved the study with the aforementioned changes.

5. "Evaluate improved collection, handling, and transport techniques designed to increase survival of juvenile salmon and steelhead" by Donn Park.

Steve Pettit wondered if this evaluation would replace the meager evaluation now in place, and Doug Arndt and John Williams said it would.

Pettit emphasized that getting excellent controls was essential. Pettit mentioned that operations personnel were concerned that releasing a section of the barge would unbalance the barge and create major problems. After considerable discussion, the Committee decided that the experimental fish would be put in the barge according to standard operating procedures and the controls would be placed in and released from a separate holding unit on the deck of the barge.

Bob Vreeland suggested Park look into marking replicate groups, however, Lyle Calvin stated Park's plan was the best way to get meaningful data.

Lyle Calvin asked if Park knew the size of the standard error, and Park said he did not. He agreed to have Frank Osslander look into it further. It was agreed that more fish than originally called for might be needed. Steve Pettit thought the information was important enough that he could sell the need for more fish if necessary. Park agreed to attend the 7 August meeting of FTOT and relate the numbers of fish needed and his plans for handling and marking.

With regards to Objective 2, several people wondered about the chances of an adequate adult trap at Priest Rapids Dam--there was a lot of conjecture but no definitive information. The Committee agreed that unless there were definite plans for a trap at Priest Rapids Dam, the portion of the objective pertaining to spring chinook salmon should be dropped.

In relation to Objective 3, Calvin asked Park to rewrite and clarify Paragraph 3 on Page 5 because of a lack of true replicates.

The Committee agreed that Objective 4 should proceed. Park warned that in his opinion, data from current seawater challenge work cannot be applied to earlier transportation data because the marking and handling techniques, etc., have improved so much.

The Committee unanimously approved this study in accordance with the aforementioned comments.

6. "Continuing studies to improve and evaluate the juvenile fish collection at Lower Granite Dam" by Dick Krcma.

This proposal evoked much discussion. After John McKern discussed the CofE's plans for screen redesign, it was decided that most of Task 1 be dropped as proposed, with Task 1.3 work shifted to McNary Dam with fall chinook salmon. Several alternatives for sampling were suggested to Al Giorgi for Objective 2 but no definitive conclusions were reached. Finally the Committee unanimously agreed that Dick Krcma and Giorgi should resubmit proposals for work on fall chinook salmon at McNary Dam and a redesigned plan for Objective 2. Some things for the researchers to consider were:

- a. Steve Pettit felt Idaho would go along with early and late tests with spill and manipulation. Once the transportation-maximum-date was reached, they would not agree to spill unless Mother Nature dictated it--artificial spill is not an option.
- b. John Williams felt scale samples were needed to identify hatchery and wild fish.
- c. New proposals must include the best estimate of total sacrificed fish (net and other samples).

When Krcma and Giorgi resubmit their proposal, the Committee agreed to phone or mail their comments, approvals, etc., to the Committee Chairman.

7. "Determine fish guiding efficiency of submersible traveling screens at Little Goose Dam" by Dick Krcma.

An error was noted on Page 7, Impact 1: only one STS would be modified.

Lyle Calvin again stated the differences in the meaning of and and suggested it would be wise for researchers to discuss it in their proposals in a manner similar to what Donn Park did in his proposal on downstream bypass systems, turbines, and spillways (Number 4 in these notes).

John McKern asked if hydroacoustic work could be done in conjunction with Dick Krcma's work; the Committee had no objection.

After much discussion it was agreed that FGE would be done separately from vertical distribution (VD). A suggested testing schedule beginning on about 12 April was agreed upon:

Day	Units		
	4A	4B	4C
1		VD	
2	FGE Stnd. STS	FGE STS & raised gate	STS
3	FGE STS & raised gate	FGE Stnd. STS	STS
4		VD	
5	Same as Day 3		
6	Same as Day 2		
7		VD	
8		Same as Day 2	
9		Same as Day 3	
10		VD	
*11		Same as Day 3	
*12		Same as Day 2	
*13		VD	

* optional: if at Day 10, FGE is \leq 40% and variability is stable, terminate test and switch to a modified (lowered) screen and start schedule again at Day 2.

This schedule will probably take all the time, and mid and late test periods as proposed should be essentially eliminated.

It was also agreed that it would be highly desirable to keep flow and operations as stable as possible at least during the 3-day blocks.

The Committee unanimously agreed to the research as modified.

8. "Determine fish guiding efficiency of submersible traveling screens at Lower Monumental Dam" by Dick Krcma.

Initially Dick Krcma corrected an error on Page 2, Sentence 2: the words, "in early April" were eliminated; the sentence should read "Tests would start when sufficient salmon are available for testing."

The Committee unanimously agreed that only vertical distribution studies would be done; one in late April-early May and one in June on zeros. Each test would last 3 days--if variability is large, additional test days may be needed. It was also suggested that hydroacoustic information could be used to schedule tests to avoid unexpected "slugs" of fish being taken in the nets.

The Committee unanimously, agreed to the proposal as modified.

9. "Evaluation of rehabilitated juvenile fish collection and passage system at John Day, FY86" by Dick Krcma.

The discussion was brief on this proposal. It was felt that only 50% of the rehabilitation project would be completed but that the research could continue if: (1) the tainter gates could be lowered and the proper head for OPE tests could be achieved and (2) tainter gates could be opened to allow enough flow to simulate flow for a total system. The final proposal would be written to reflect the need for the tainter gate adjustments.

Taking into account the requirement for appropriate tainter gate adjustment, the Committee unanimously approved Objectives 2, 3, and 4 and Objective 1 was dropped.

10. "Continuing studies to improve and evaluate the juvenile bypass systems at Bonneville Dam" by Dick Krcma.

Much of the discussion concerned the formulas on Pages 4 and 5--it was agreed that as stated they were simply a background concept, and Lyle Calvin and Frank Ossiander would discuss the subject in detail and come up with a more appropriate section for the final proposal. The Committee unanimously agreed to approve Objective 1 and instructed the researchers to include a detailed schedule in their proposal for review at the October meeting of the Committee.

With regards to Objective 2, Calvin questioned whether the analysis on Pages 8 and 9 would work. Other Committee members also had questions or comments, e.g.:

- a. how much time will the tests take? (Pettit)
- b. is the spread of 80 vs 140 kcfs enough spread? (Arndt)
- c. assumptions and statistical design need better definition
(Calvin)
- d. schedules and impacts need to be spelled out more carefully
(Pettit and Gerke)
- e. the work is rather low priority at this time (Willis)

The researchers were advised to prepare Objective 2 for the October meeting taking into account the aforementioned comments and questions.

Objective 3 was postponed for at least a year.

Objective 4 was approved as written.

In addition to the basic discussions on proposals, there was a discussion on measures that must be taken to avoid last minute conflicts on whether research should be modified in the field or schedules should be changed in

relation to conditions at the time. Bob Gerke and Steve Pettit initiated the discussions, and the following recommendations were agreed to by the Committee:

- a. There must be specific plan written into each contract describing circumstances that will require starting, stopping, or modifying the approved schedule (the FPDEPCC will work out proposed details in time for researchers to include Information in the proposals presented in October.
- b. Specific personnel must be designated as appropriate people to contact for decisions regarding each research project; either a primary or an alternate must be available by phone at all times during the field season.
- c. Detailed schedules must be a part of each proposal.
- d. Before schedules are set, make certain that the WBC is aware of the schedule and what conditions are needed.

It was agreed that the next meeting of the Committee would be 29–30 October.

The meeting was adjourned at 1600 hours 24 July.

On 1 August 1985, these minutes were sent to the Committee Members attending the meeting for their corrections or comments by 23 August; no corrections or comments were received, so the minutes are considered approved.

In late August, written comments relating to the proposals, etc. were received from Stephanie Burchfield (CRITFC) who was unable to attend the meeting; these comments are attached.

Attachment



COLUMBIA RIVER INTER-TRIBAL FISH COMMISSION

2705 East Burnside Street, Suite 114, Portland, Oregon 97214

Telephone (503) 238-0667

MEMORANDUM

TO: Gerald E. Monan
FROM: Stephanie Burchfield *SB*
DATE: August 19, 1985
SUBJECT: Research Review Subcommittee Minutes

I regret missing the July 23 and 24 meeting of the Fish Research Scientific Review Subcommittee of the Corps' Fish Passage Development and Evaluation Program. This committee plays a critical role in ensuring that Corps-funded research projects are designed to answer actual management questions. Because I was unable to attend the meeting, I am submitting the following comments that were not discussed by others in attendance according to your draft minutes.

General Comments

1. It was my understanding that the FPDEP Research Needs Subcommittee had requested the Research Review Subcommittee to evaluate the proposals in terms of how well the proposals address stated research needs. The minutes do not indicate that this evaluation criterion was discussed at the meeting. I had expected the Review Subcommittee to work from a table listing research needs and to match appropriate proposals with needs. I suggest that we try this approach at the October meeting.
2. I also request that the committee prepare a table listing the proposals that require special operating conditions such as "no spill" and "no sluice" conditions. I understand that this idea was suggested at the meeting, although it is not reflected in the minutes. While the tribes realize that sometimes these conditions are necessary in research studies, we are concerned with the negative impacts of these conditions on the non-test migrating fish. A table that gives proposed dates and durations of special conditions would facilitate our estimation of the cumulative impacts of several research projects.
3. For the 1985 research season, the fisheries agencies selected "windows" of time during which certain portions of research studies should be conducted. The purpose of the windows was to reduce impacts on non-test fish by scheduling research for off-peak passage periods. The committee should seek, evaluate, and endorse "research windows" from the fisheries agencies and tribes for each research proposal.

4. In general, I support the recommendation concerning conduct of research listed on the final page of the minutes. However, I was surprised that contact persons among the agencies were proposed rather than using the Water Budget Center as the primary contact. The tribes consider the WBC as a reliable information network for both the agencies and tribes. We do not have the capability to follow the daily progress of each research project, and for this reason, we believe the WBC must be designated as the primary contact for all-inseason research changes.

Specific Comments

1. "Proposed supplement to the 1985 study design evaluation of adult fish passage at McNary Dam." Please send me a copy of this proposal.

2. "Hydroacoustic evaluation of fish guiding efficiency at Little Goose Dam." My office never received a copy of this proposal. Please send one.

3. "Evaluation of juvenile salmonid passage through downstream migrant bypass systems, turbines, and spillways." The pit tag seems well suited to this type of research. Apparently, this subject was discussed at the meeting even though the minutes fail to mention it. Once this technique is available, passage survival studies could be performed at several projects with the pit tag, thus requiring many fewer fish than needed with Park's proposal. Moreover, even if results of the presently designed study are significant, these results will only allow comparison of the relative juvenile fish survival through the turbines, spillway, and bypass system at Lower Granite Dam. The results will not be applicable at other projects, where hydraulic conditions and fish behavior may differ. Thus, if this information is deemed necessary for each project, it would behoove us to use a methodology that minimizes fish impacts.

4. "Evaluate improved collection, handling, and transport techniques designed to increase survival of juvenile salmon and steelhead." The minutes state that "Pettit emphasized that getting excellent controls was essential." I wholeheartedly agree with him. The minutes do not, however, reflect that any changes were made in the study design to satisfy my concern. To what river conditions will the controls be exposed? Do we want to compare transportation to poor river conditions, to river and transport at McNary, or to assumed best river conditions? If our purpose is to justify transportation, we should choose poor river conditions. If, instead, we want to compare two passage modes, transportation versus planned spill and bypass, we should compare a range of conditions for both modes. By studying a range of conditions, we could determine if one mode is more successful at one end of the range and less successful at the other end.

The tribes believe that our purpose in any transportation evaluation should be to compare transportation with other passage

modes, specifically with spill and bypass. It is not presently feasible, however, to study and compare a whole range of conditions for both modes. For this reason, we propose that a study be designed that compares the best possible transportation methods with the most favorable spill and bypass conditions. The "controls" in this case (spill and bypass) should be subjected to the best possible passage conditions, and these conditions should be clearly stated and followed. Unfortunately, passage conditions in the Snake River are expected to change radically in the next decade, as bypass systems are planned for Ice Harbor and Lower Monumental Dams. Control fish should not be barged to Little Goose Dam. Additionally, in order to insure that control fish are not transported, transport operations at Little Goose and McNary should be suspended during the study period. Although these study conditions are severe, I see no other way to conduct this study and expect to produce valid results.

5. "Determine fish guiding efficiency of submersible traveling screens at Little Goose Dam" ...and "...at Lower Monumental Dam." Both of these proposals allow the option of mid- or late-season testing if initial FGE measurements are unacceptable. I think the primary question managers should be asking is, "What FGE level is necessary to justify bypass system construction?" The NPPC's Fish and Wildlife Program calls for completion of juvenile fish bypass facilities at Ice Harbor and Lower Monumental Dams by September. Prototype studies were to be completed in 1985. Obviously, we are behind the schedule. Why was the prototype study at Ice Harbor delayed until 1987? Is there any reason why improving FGE at Lower Granite and Little Goose is more important than moving quickly to establish a permanent bypass system at Ice Harbor? The tribes support efforts to improve bypass facilities at every dam to attain best possible passage. However, as long as bypass facility construction is delayed at Ice Harbor and Lower Monumental, we will continue to insist that adequate spill levels be provided for spring and summer migrants.

The tribes cannot support the testing schedule at Little Goose Dam as shown in the minutes unless there is a guarantee that this schedule will not interfere with the provision of spill for spring chinook as requested by the tribes and agencies.

I cannot state a tribal position on the mid- and late-season testing until I have a better idea of the potential fish impacts. I would like to see how these tests fit within acceptable windows. I would also like to see mechanisms for in-season cooperation between researchers, the Corps, and the Water Budget Center, especially regarding conduct of studies outside approved windows.

6. "Determine fish guiding efficiency of submersible traveling screens at Lower Monumental Dam." The minutes state "the Committee unanimously agreed that only vertical distribution studies would be done." What was the reason for this modification, especially given that the Fish & Wildlife Program schedule has already been delayed?

7. "Continuing studies to improve and evaluate the juvenile bypass systems at Bonneville Dam." The tribes believe that Objective 2, "to define the proportion of subyearling chinook salmon utilizing the First and Second Powerhouses under varying modes of project operations," will not be answered by the existing study design. It might be prudent to delay this study until the pit tag, which would allow for a study design more likely to answer stated objectives, is available.

I appreciate the opportunity to contribute to the work of this committee and will make every effort to attend the October meeting.

cc: Research Review Subcommittee members



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE

APPENDIX III

Northwest & Alaska Fisheries Center
Coastal Zone & Estuarine Studies Division
2725 Montlake Boulevard East
Seattle, Washington 98112

November 25, 1985

F/NWC5:GEM

TO: Ed Mains, Chief, Environmental Resources Branch
NPD, U.S. Army Corps of Engineers

FROM: *Gerald E. Monan*
Gerald E. Monan, Chairman
Fish Research Scientific Review Subcommittee

SUBJECT: Minutes, Meeting of Fish Research Scientific Review
Subcommittee (FRSRS), 29 and 30 October 1985

The meeting was convened at the Northwest and Alaska Fisheries Center in
Seattle, Washington, at 1010 hours, 29 October 1985. In attendance were the
following individuals:

*Doug Arndt	CofE
*Teri Barila	CofE
*Stephanie Burchfield	CRITFC
Lyle Calvin	CofE (Oregon State University)
Wes Ebel	NMFS
*Bob Gerke	WDF
Mike Gessel	NMFS
Al Giorgi	NMFS
Gene Matthews	NMFS
*Jerry Monan	NMFS
Fred Olney	FWS
Frank Ossiander	NMFS
*Steve Pettit	IDFG
Howard Raymond	NMFS
Tom Ruehle	NMFS
George Swan	NMFS
Bob Vreeland	NMFS
*John Williams	CofE
*Chuck Willis	ODFW
Jay Wilson	NMFS

* = Committee members (Note: Teri Barila replaced John McKern
as a committee member--see Attachment 1).



Stephanie Burchfield furnished the Committee a chart showing the fish needed for FPDEP research (Attachment 2), and Jerry Monan furnished a chart indicating special flow conditions required for the research (Attachment 3).

The following proposals submitted for funding were reviewed for experimental design and final recommendations were made for acceptance of the studies:

1. "Survival of chinook salmon smolts with stress levels encountered at Dams" by T. C. Bjornn.

The researchers were not present to speak on this study; the Committee approved the study with the following comments:

a. John Williams suggested that for the groups released in 1986, the researchers try as much as possible to duplicate absolute stress levels (156–210 ng/ml) observed at Lower Granite Dam.

b. Chuck Willis asked if it would be possible to hold a control group that was not coded wire tagged for the tests mentioned in Item 3 of Bjornn's letter dated September 26 (Attachment 4). If so, he would like to have it done.

2. "Evaluate improved collection, handling, and transport techniques designed to increase survival of juvenile salmon and steelhead" by Donn Park (presented by Gene Matthews).

Gene Matthews opened the discussion by stating that due to safety considerations, they were proposing to transport the controls in Task 1.1 below Little Goose Dam by truck rather than barge. He also proposed alternating daily marking of control and test fish, i.e., test fish on one day and controls the next, etc., etc. This triggered considerable discussion about the controls and river conditions during tests. Suggestions were made to barge fish, move the entire operation to Little Goose Dam, add a clinical

test of stress in the control group, and what river conditions should be tested (see attached letter from S. Timothy Wapato for an example--Attachment 5). After hours of discussion and the statement from Lyle Calvin that there is no such thing as perfect controls, the following pertinent recommendations were made:

a. Objective of study should clearly show that both the controls and test fish were transported, i.e., one dam vs. several dams, respectively.

b. Controls should be trucked to below Little Goose Dam. (Wes Ebel agreed to provide data supporting assumption that less stress would be imposed on juveniles passing Little Goose Dam via truck than through the bypass)

c. Marking of test and control fish should be alternated daily.

d. Matthews should include a clinical test of stress for short hauled fish vs. fish taken from the raceway--it was suggested that either both groups be marked or neither group be marked. Matthews will include the details of this test in his final proposal.

e. Sampling should be based on 10% of collection and the total fall within 3% of the total run (Water Budget criteria).

f. For 1987, researchers should investigate changing the test site to Little Goose Dam or conducting a parallel study at Little Goose Dam.

g. The following "rules" were developed for the entire study:

(1) If it is a "critical" low flow year, -the work will not be done. "Critical" low flow year was defined as a year, based on the 1 April forecast, in which the weekly average flow for the Snake River in mid to late April will not equal or exceed 85 Kcfs and the flow for the Columbia River at McNary Dam will not equal or exceed 220 Kcfs. Donn Park is to develop an exact go-no go decision rule and procedure for application and include it in his final proposal (once a decision is made to go or not go it stands for the

duration of the test). The decision to go or not go should include the input of the researchers, CofE Contract Officer, fishery and tribal agency representatives, and the Water Budget Center.

(2) During the course of the entire study, a wide range of flows should be tested; this should include at least three high flow years.

(3) Specific flows will be those influenced by the Water Budget Center.

(4) In river dam passage conditions should be those established by the annual Fish Passage Plan.

(5) The rules and procedures should be evaluated, and appropriate modifications made annually.

With the previously mentioned provisos, Objective 1 was approved.

The discussions on Objectives 2 and 3 were not as lengthy. Matthews was asked how fall chinook salmon would be identified so marking them would be avoided; he responded by saying size and timing. The Committee asked that a decision rule be added to the last paragraph under Task 2.1 on Page 7 of the proposal.

Calvin asked for clarification of the statement that brands and CWT codes would be changed every 10,000 fish in each group (Page 7, 2nd paragraph under Task 2.1). Matthews responded that this meant 10,000 test and 10,000 controls.

Calvin stated that the precision of the tests should be stated in the final proposal, Matthews and Howard Raymond said they would do so.

Bob Gerke stated that with regards to the adult evaluation, to the best of his knowledge, Grant County PUD had not asked for permission to install a trap at Priest Rapids Dam nor had they submitted any plans. Doug Arndt stated

that the CofE would require a letter from Grant County PUD showing a reasonable design and a time frame for installation--Gerke agreed to formulate a letter from the agencies and tribes asking the PUD for a response.

Objectives 2 and 3 were approved with the aforementioned recommended clarifications for the final proposal.

3. "Evaluation of juvenile salmonid passage through downstream migrant bypass systems, turbines, and spillways" by Donn Park (presented by Gene Matthews).

Initial discussions centered on where the fish would be recovered at Little Goose Dam. The debate was between recovering them from the bypass facility or dipping them from the gatewells. The Committee tended to feel dipping was the proper way. After much discussion, the Committee decided that the researchers should review data to be provided by George Swan and then decide which area to use. (Note: Swan's data were reviewed, and the researchers now agree that dipping the gatewells is the way to go, and they will do so.)

Stephanie Burchfield asked for clarification of spill during spillway release (Task 1.1, Item 1, Page 3). Matthews responded that spill would be 10,000 cfs per bay through three bays.

There was some discussion about releasing the fish, via hose, too close to the spillway. The thought being that the fish would not have time to orient themselves properly. It was agreed to allow as much room as possible, and that was the best that could be done. The Committee agreed that the researchers should use their past experience to guide the exact location.

After a discussion on the statistical design of the study, Matthews and Frank Osslander agreed to rewrite the statistical section on Page 6 to answer Calvin's concerns. Tasks 1.1 and 1.2 were approved.

Teri Barila expressed concern that the long term holding stress tests proposed in Task 1.3 were less than satisfactory. Barila's main concern was the masking of the effects of short term stress by holding stress. After much debate and several votes (none of which were unanimous), the Committee decided that Barila would assemble a panel of experts to include Walt Dickhoff, NMFS, and devise a plan to answer the stated objective of Task 1.3. The plan would be mailed to the Committee for their approval or rejection. If the Committee feels the plan proposed by Barila's group is not better than Park's plan, they would recommend the researchers go with their plan as proposed in Task 1.3.

The status of Task 1.3 will be decided after the Committee votes on the plan developed by Barila's committee.

Arndt gave a caveat relating to Item 1 under Project Impacts on Page 10. He stated the CofE would try to maintain a stable river flow, but Mother Nature may dictate otherwise.

4. "Continuing studies to improve and evaluate the juvenile bypass systems at Bonneville Dam" by Richard Krcma (presented by Mike Gessel).

At the beginning of the Committee's discussion, there were several points made that pertain to all of Krcma's proposals.

a. Krcma will include a week by week schedule of events in each proposal.

b. Ossiander will show the standard errors expected and the criteria for their establishment in each proposal.

c. Making a decision on the total number of replicates to be tested based on the results of the first three replicates is unacceptable from a statistical point of view.

Burchfield and others suggested that Krcma insert the material accidentally left out between the last paragraph on Page 1 and first paragraph on Page 2 (refer to proposal dated 5 June 1985).

With regards to Task 1.1, Calvin stated that because it requires the assumption there is no difference between units (i.e., 12B and 12C), the test comparing streamlined **vs.** standard trashracks was less than good. Mike Gessel and Williams replied that they were aware of the problem but thought the assumption was okay for this study. Chuck Willis felt that since we were looking for rather big improvements, slight differences between units would not matter. Raymond stated that based on past data, he also thought the test was satisfactory. Task 1.1 was approved.

Task 1.2 was approved with a minimum of discussion.

Gerke asked if Task 1.3 was discussed at the Committee's last meeting, and Williams said it was not. Gerke then asked if the literature on lights was reviewed, and Williams said it was. After some discussion on what light research had shown previously and a statement by Calvin that the design was adequate, the Committee approved Task 1.3.

With regards to Task 1.4, the Committee decided that at least a 40% FGE would have to be established in Tasks 1.1-1.3 before testing of Task 1.4 in the full powerhouse operating mode should proceed. Willis asked why complete Task 1.4 before Task 1.5, and Williams replied that physical constraints involved in adding the ceiling extensions preclude testing 1.4 after 1.5.

Gerke asked when would the work be done? Williams replied that the first week in May (5 days of testing) was the only time available, and the researchers would need about 2 hours of operation before the test, 2 hours of testing, and then the units could be shut down. Gerke felt there were too many fish in the river to proceed with the test. Williams felt the CofE would

require a full powerhouse test before they would make changes. Several people felt the Committee should examine the issue of what fish could be saved by various improvements in FGE compared to the cost in fish for the tests. Raymond agreed to furnish the Committee with a chart showing benefits in saved fish for various increments of improvement and also the losses of fish via the necessary tests. He also agreed to show his justifications for any assumptions.

Willis suggested that after reviewing Raymond's chart and if the potential gains were sufficient we should go ahead with the tests, but the agencies would retain the right to develop a go-no go stop point during the season. This would be carried out through the Water Budget Center (Gerke will ensure coordination). This go-no go plan would also apply to Task 1.5.

The Committee approved Tasks 1.4 and 1.5 in accordance with Willis' suggestion.

Objective 2 did not generate much discussion. It was agreed that $P < 0.10$ on Page 7 of the proposal really meant a 90% confidence interval. A series of tests in the last paragraph on Page 7 was defined as 10 tests. Bob Vreeland questioned the advisability of using only a single vertical column of fyke nets to sample turbine passage and depth distribution. The Committee felt this assumption had been sufficiently tested. Objective 2 was approved.

Objective 3 F,,, eliminated due to lack of test fish.

Objective 4 did not generate much discussion. Arndt stated that the proposal as written did not justify why the work was being done; Raymond agreed to rewrite this section and show adequate justification.

Willis asked if recommended improvements to the DSM were being made; Arndt replied the CofE is working on the changes and plans to complete them. Calvin stated that the sentence on Page 11 that reads "These formulas depend

upon r being constant over the sampling intervals throughout the day." is not a true statement; Raymond agreed, and the statement will be eliminated in the final proposal. Also, at Calvin's suggestion, the word "ensure" will be replaced by "measure" in the first sentence in Task 4.4 on Page 11. There was no further discussion on Objective 4, and it was approved.

5. Additional Fish Guiding Efficiency (FGE) Studies on Yearling Chinook Salmon at The Dalles Dam" by Richard Krcma (presented by Mike Gessel).

The Committee was not satisfied with the tests as proposed and recommended and approved the following test plan:

a. A 10-day test period in early April that would test a lowered STS with the sluice on alternated daily with a lowered STS with the sluice off. The work should be done as soon as enough fish are available but before the tests would impact large numbers of upriver fish.

b. A 5-day test period with or without sluice depending upon which condition proves best in the early tests. This should be done later preferably on an ascending part of the curve and prior to the peak migration period for smolting upriver fish.

c. The go-no go group mentioned previously in these notes (researchers, CofE Contract Officers, agency and tribal representatives, and WBC) would dictate exact timing; the CofE and the researcher agreed to abide by the decisions of this group.

Willis felt the effectiveness of spill should be tested at The Dalles Dam sometime; Arndt replied there is a spill monitoring plan being developed for the future, and he will keep agencies informed.

The proposal was approved as modified.

6. "Evaluating of rehabilitated juvenile fish collection and passage system at John Day Dam, FY86" by Richard Krcma (presented by Mike Gessel).

Objective 1 invoked some discussion. Calvin asked if OPE data developed when there were small numbers of fish present in the gatewell could be expected to be the same as when large numbers were present? Gessel replied, there are no data to indicate the numbers of fish in the gatewell would critically bias the data. Arndt questioned if OPE tests were needed; Williams felt conditions at John Day Dam warranted further testing. Burchfield asked for a schedule of the tests to be developed--Gessel agreed to include this in the final proposal. Burchfield asked if the numbers of fish impacted could be developed; it was finally agreed that this was not really possible. The Committee recommended and approved the following plan for Objective 1:

- a. Initiate the study with the tests in the proposal.
- b. Follow these tests with experiments that test altered head and vertical barrier screens and panels.
- c. Fine tune the system within its inherent constraints.

Vreeland asked that reasons for adjusting the tainter gates be stated in the rewritten proposal; Gessel agreed.

The Committee approved Objective 2 and asked that the researchers justify in the final proposal the reasons for the required numbers of fish mentioned in the last paragraph on Page 5 of the 1 October proposal. The Committee also asked that the researchers start with the releases at the bottom of the system and then work back (this may eliminate some tests).

Objective 3 was approved with very little comment. Calvin cautioned that in Task 3.1 "reliability" actually meant "repeatability" and "efficiency" actually meant "percent capture."

7. "Studies at McNary Dam to improve fish guiding efficiency of subyearling chinook salmon" by Richard Krcma (presented by George Swan).

To begin the consideration of this proposal, some errors and omissions in the proposal were corrected. A Table 2 showing the FGE and vertical distribution plan was added (this was also corrected in some minor ways-- corrected copy attached - Attachment 6). On the last line of Page 8, "56" was changed to "156." In Line 4 on Page 10, the equation $56 \times 2 \text{ STS} \times 30 = 9,360$ was changed to $156 \times 2 \text{ STS} \times 15 = 4,680$. In Lines 5 and 6 on Page 10, the number "522" was changed to "870" and the equation $20 \times 2 \text{ STS} \times 30 = 1,740$ was changed to $29 \times 2 \text{ STS} \times 15 = 870$. In Line 7 on Page 10, the number "4,740" was changed to "4,620" and the number "12,360" was changed to "8,430."

Calvin stated that if the vertical distribution varies significantly between Units 5B and 5C, additional tests will need to be run (Item 1, Page 6). Raymond agreed that additional replicates would need to be run to determine degree of variance and then adjust the data accordingly.

Gerke asked if small fish could be expected to impinge on the deflector at the 30° angle? Raymond said he didn't know, but because the study was in late July, real small fish should not be present.

Barila stated that based on temperature, Walla Walla Operations thought Unit 7 might be better to use than Unit 5. Raymond and Williams responded that the work should be done where the most fish are located.

The question was raised again on the adequacy of using one vertical row of nets to sample the fish population in the gatewell as opposed to total coverage. Gessel and Swan agreed to provide Calvin with data from Lower Granite, McNary, and downriver dams. Calvin agreed to review and make a

determination. If the 1/3 sample is deemed inadequate, appropriate modifications will be made in the study plans.

The proposal was approved.

Barila handed out a brief plan for adding hydroacoustic work at Little Goose, Lower Monumental, and McNary Dams (Attachment 7).

The Committee had no problem with combining the hydroacoustic work with NMFS studies and urged that careful coordination be accomplished. The Committee asked that Barila develop a complete concept and put out a Scope of Work. The Committee asked to see the Scope of Work so they could review and suggest changes or additions (this was to be accomplished by 26 November).

The Committee also asked that their review be a part of the ultimate bid evaluation process. An emergency meeting or conference call could be arranged if major conflicts develop.

8. "Determine fish guiding efficiency of submersible traveling screens at Lower Monumental Dam" by Richard Krcma (presented by George Swan).

Some initial corrections were made to the proposal as submitted. The first sentence on Page 1 was modified to read "The Columbia River Fish and Wildlife Program calls for a study to determine the benefits of a screening and bypass system at Lower Monumental Dam (404 B8, amended)" (per Arndt). In Line 1 of the first paragraph beginning on Page 4, the words "between three and" were deleted. Sentence 1 on Page 7 was changed to read "Information on horizontal distribution of salmonids at Lower Monumental Dam will be obtained from sampling conducted in 1986 for the general fish monitoring program or from hydroacoustic data."

Swan distributed a table that outlined the test plan (Attachment 8). The Committee approved the plan and noted that Week 1 would require 6 days because

of the alternating (daily) schedule. The Committee also agreed that they felt comfortable about terminating further testing, if the FGE obtained in Week 1's testing were 70% or higher.

The Committee approved the proposal with the previously mentioned corrections, etc.

9. "Determine what is required for acceptable fish guiding efficiency (FGE) of submersible traveling screens at Little Goose Dam and if FGE is being affected by varying levels of smoltification in yearling chinook salmon" by Richard Krcma, George Swan, and Albert Giorgi (presented by Swan and Giorgi).

Again some text corrections were made. On Page 2, Line 12, the word "assumed" was added between "the" and "smoltification." The footnote to Table 1 (Page 7) was eliminated. The footnote on Page 17 was also eliminated.

The Section on FGE tests was approved with little discussion.

There was some discussion on the Smoltification Section. The Committee felt that scale samples should be taken, and Giorgi agreed to modify Paragraph 3 on Page 14 to include an appropriate scale sampling and analysis plan.

Considerable discussion took place as to the proper way for Giorgi to sample fish in raceways. It was agreed that it is very difficult to get a true random sample, and Giorgi agreed he would research the problem and utilize the best method he can develop.

The question was raised as to why a 20-fish sample was being used in Task 2.2; Giorgi responded that this was the number needed for assays per Zaugg and Dickhoff. The Committee asked that Giorgi better define what Task 2.2 will accomplish; Giorgi agreed to clarify Task 2.2.

The Committee approved this proposal with the comments mentioned previously.

10. "Mitigation of stresses associated with passage, collection, and marking at McNary Dam" by Carl Schreck.

Arndt distributed the proposal for a laboratory study that was received late (Attachment 9). He asked the Committee, to consider its merits and to let the Committee Chairman know if they feel it should be conducted if available funds will permit.

At the conclusion of the meeting Arndt requested that the researchers work very carefully with Barila and Williams to coordinate project impacts brought about by changes resulting from the Committee's recommendations.

The meeting was ajourned at about 1545 hours 30 October.

Attachments

background

NORTHWEST POWER PLANNING COUNCIL

APPENDIX IV

Mainstem Passage of Juvenile Fish

At this meeting the Northwest Power Planning Council is considering amending its fish and wildlife program to improve the survival rate of young salmon and steelhead as they migrate down the river system to the ocean. This will have a direct effect on the Snake River salmon and steelhead runs.

The proposed amendment deals with interim objectives for the percentage of young fish that survive each of eight mainstem Columbia and Snake River dams on their way downriver. These dams are operated by the Army Corps of Engineers. If adopted, the amendment will guide the operation of each dam until permanent mechanical improvements for fish passage are made. The major mechanism for meeting these interim survival objectives is called "spill" and involves releasing fish-laden water through a spillway which bypasses the dam's turbines.

Improving the downstream survival rate of these fish at the hydroelectric dams on the Columbia and Snake Rivers plays a key role in restoring the Northwest's salmon and steelhead runs. Without this improvement, the young fish spawned in upper reaches of the river are unable to travel safely to the ocean, thus jeopardizing ratepayer investments in other projects throughout the basin.

At each dam, the fish face turbines which kill many and stun or disorient others making them easy prey for predators. The mortality rate for fish passing through each dam's turbines is approximately 15 percent. Using this average, if 100 fish begin their migration above the first dam on the Snake River, only 23 survive past the last dam. This example assumes no bypass systems or other measures are used to deflect the fish from the turbines.

Measures such as bypass systems and spill increase the number of survivors. The efficiency of these measures varies at each dam, and some dams have no bypass system at all. The Council's Columbia River Basin Fish and Wildlife Program calls for permanent mechanical improvements at each dam, but until those improvements are in place, the Council set an interim objective.

Currently the interim objective calls for a survival rate of at least 90 percent at each of the eight Corps' dams. In early 1985, region's fishery agencies and Indian tribes asked the Council to review that objective because, they argued, it was inadequate.

Working with the fishery agencies and tribes, as well as the Corps and the Bonneville Power Administration, and aided by an advisory committee, the Council has reviewed the current objective. Public hearings were held throughout the Northwest this winter to solicit further input.

After extensive consultations, the Council is now ready to consider four alternatives. One alternative is to stay with the status quo. The other three alternatives would go further toward improving the survival rate of the young fish. Each alternative is based on the best available scientific knowledge, and must be judged on the basis of its biological benefit to the fish and its impact on the power system.

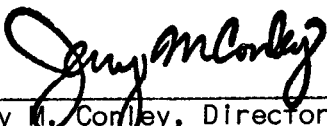
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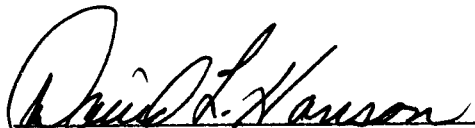
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